

1/19

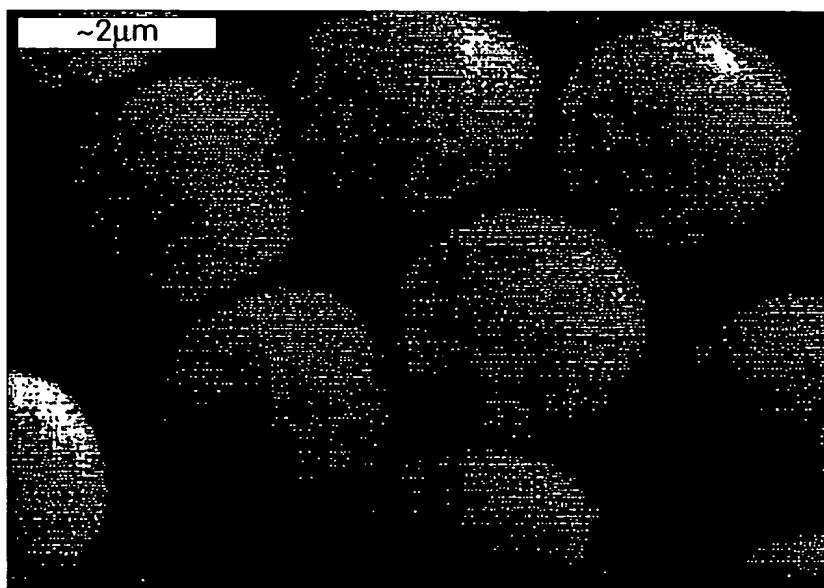


Fig. 1A

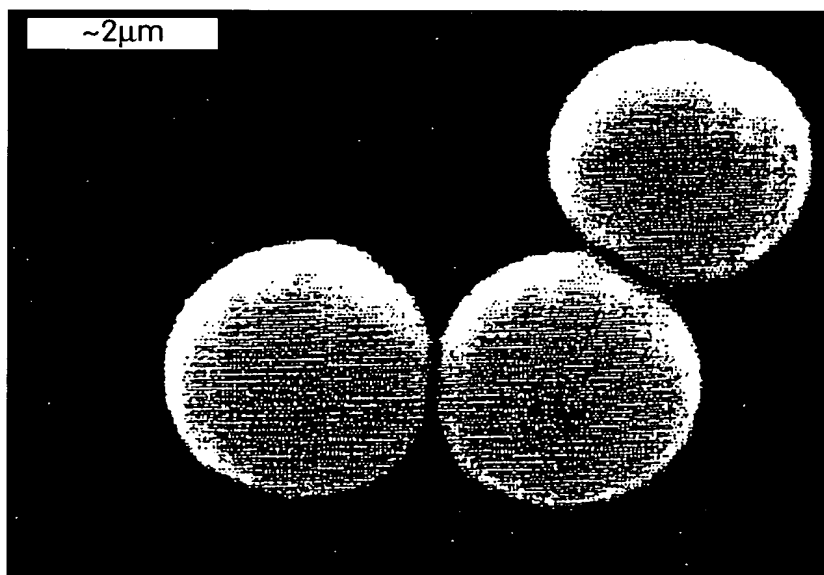


Fig. 1B

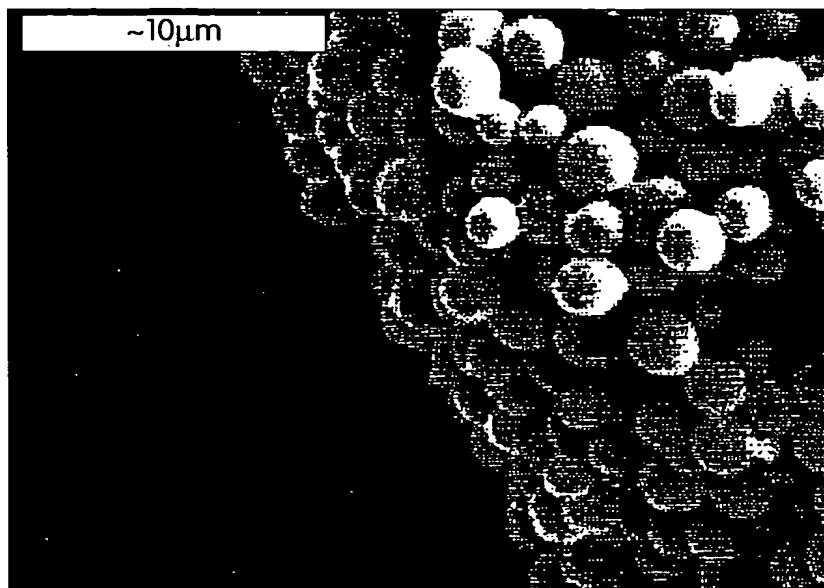


Fig. 2A

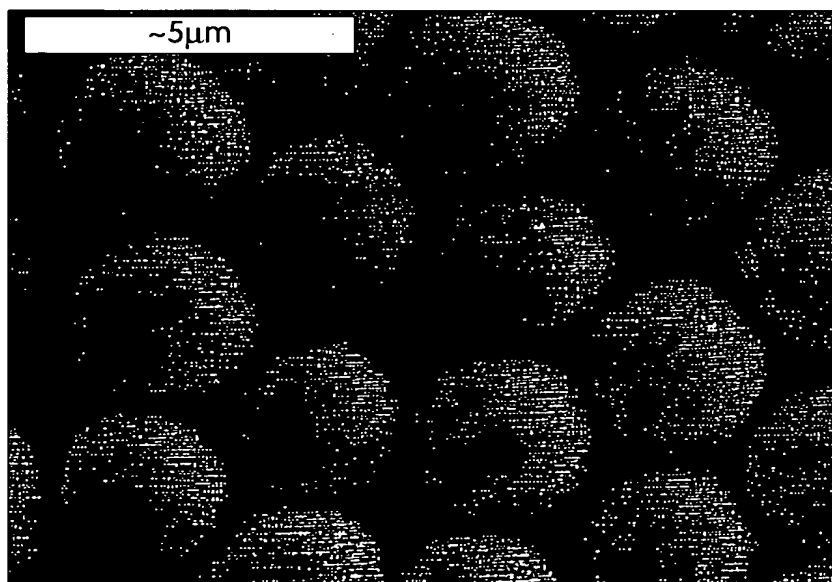


Fig. 2B

3/19

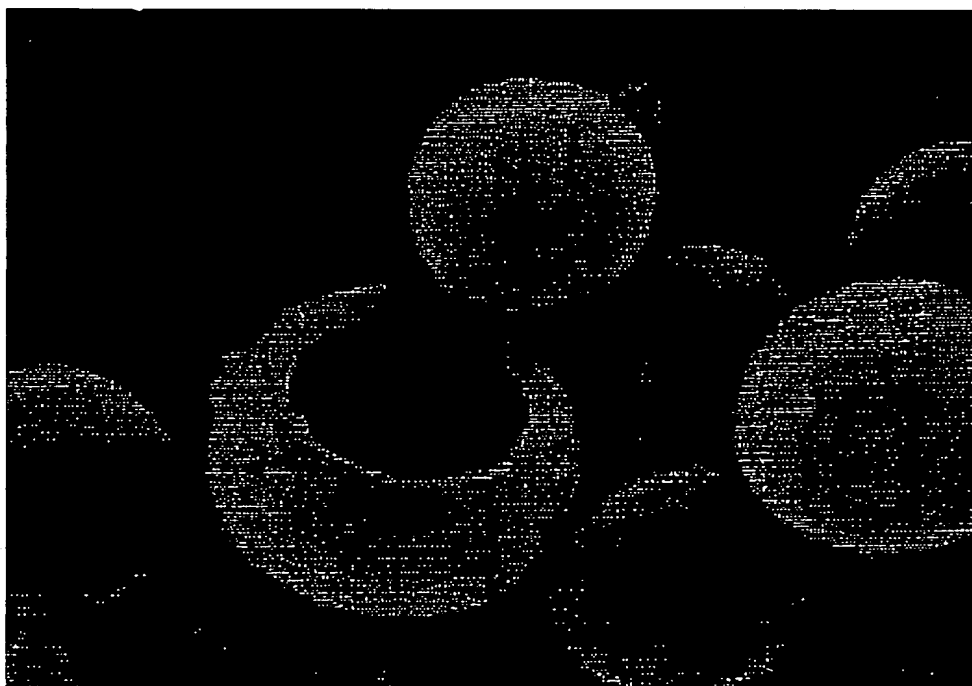


Fig. 3

4/19

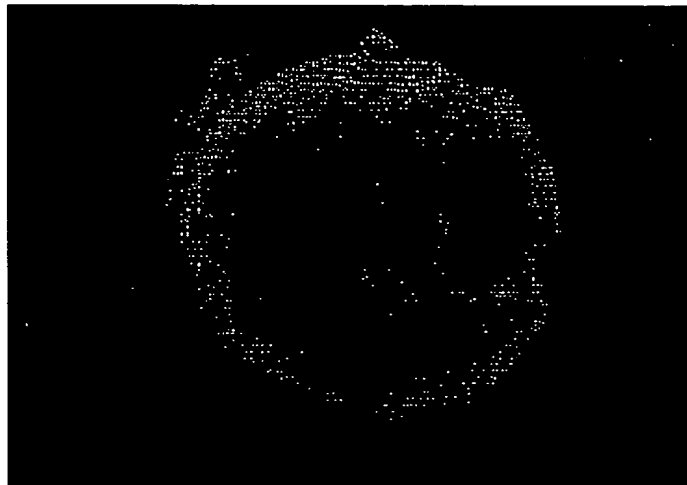


Fig. 4A



Fig. 4B

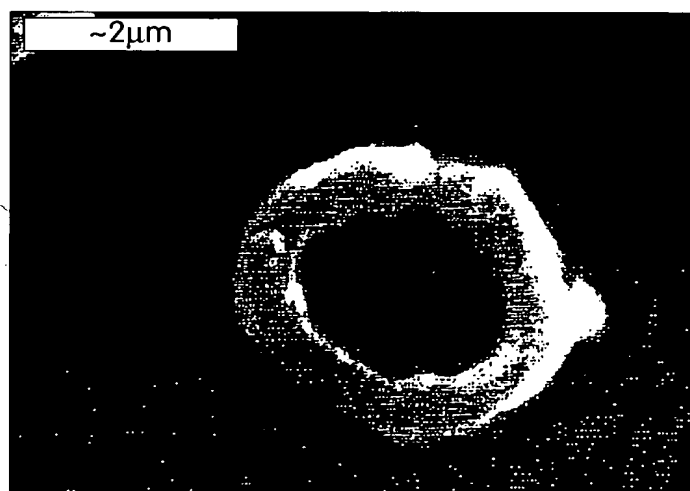


Fig. 4C

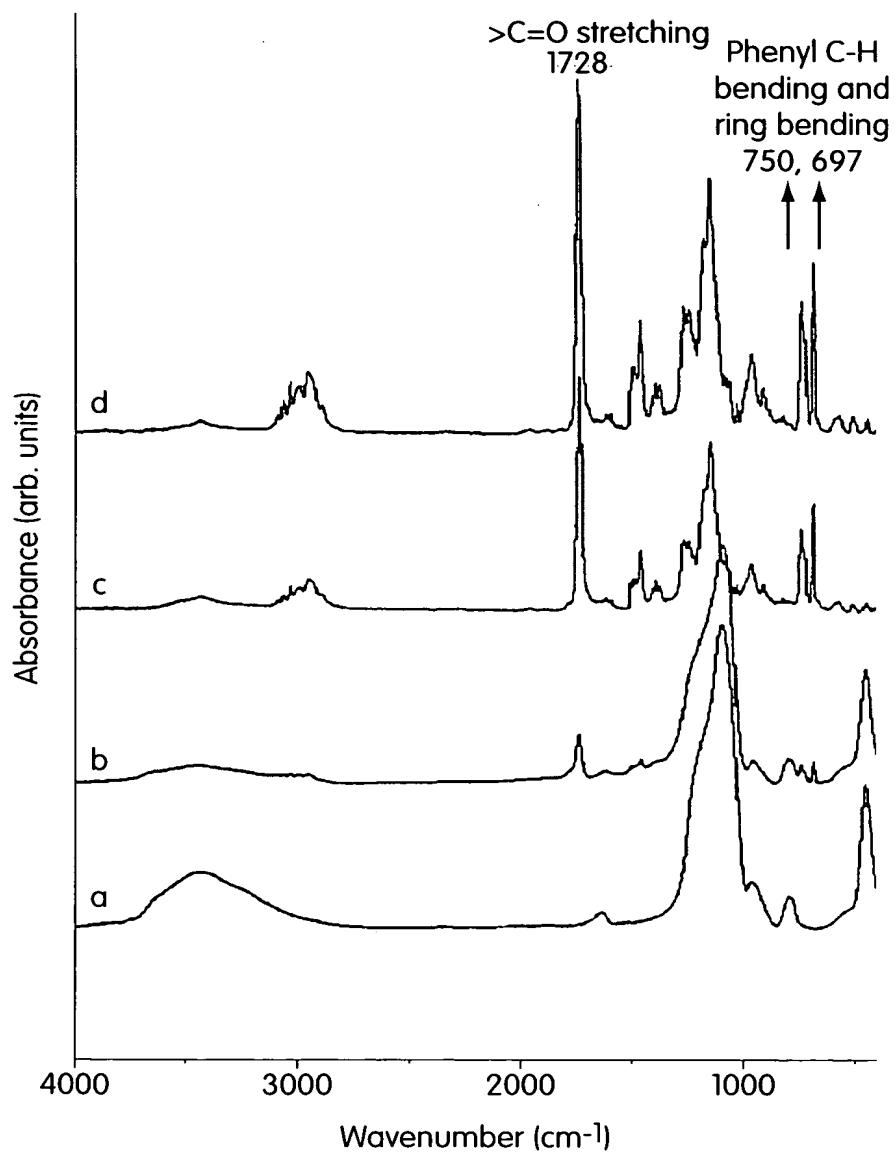
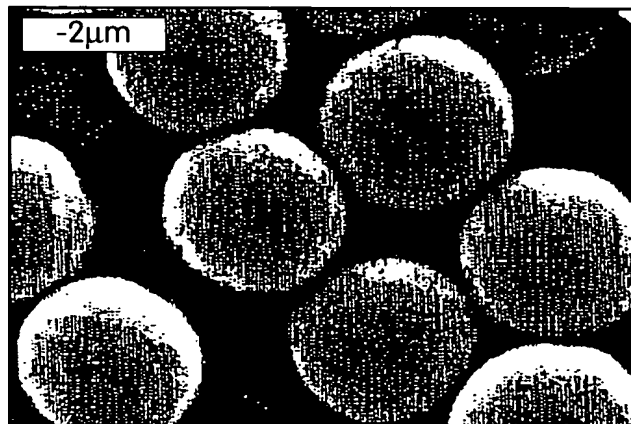


Fig. 5

6/19



Intact hollow microspheres

Fig. 6A



Broken hollow microspheres

Fig. 6B

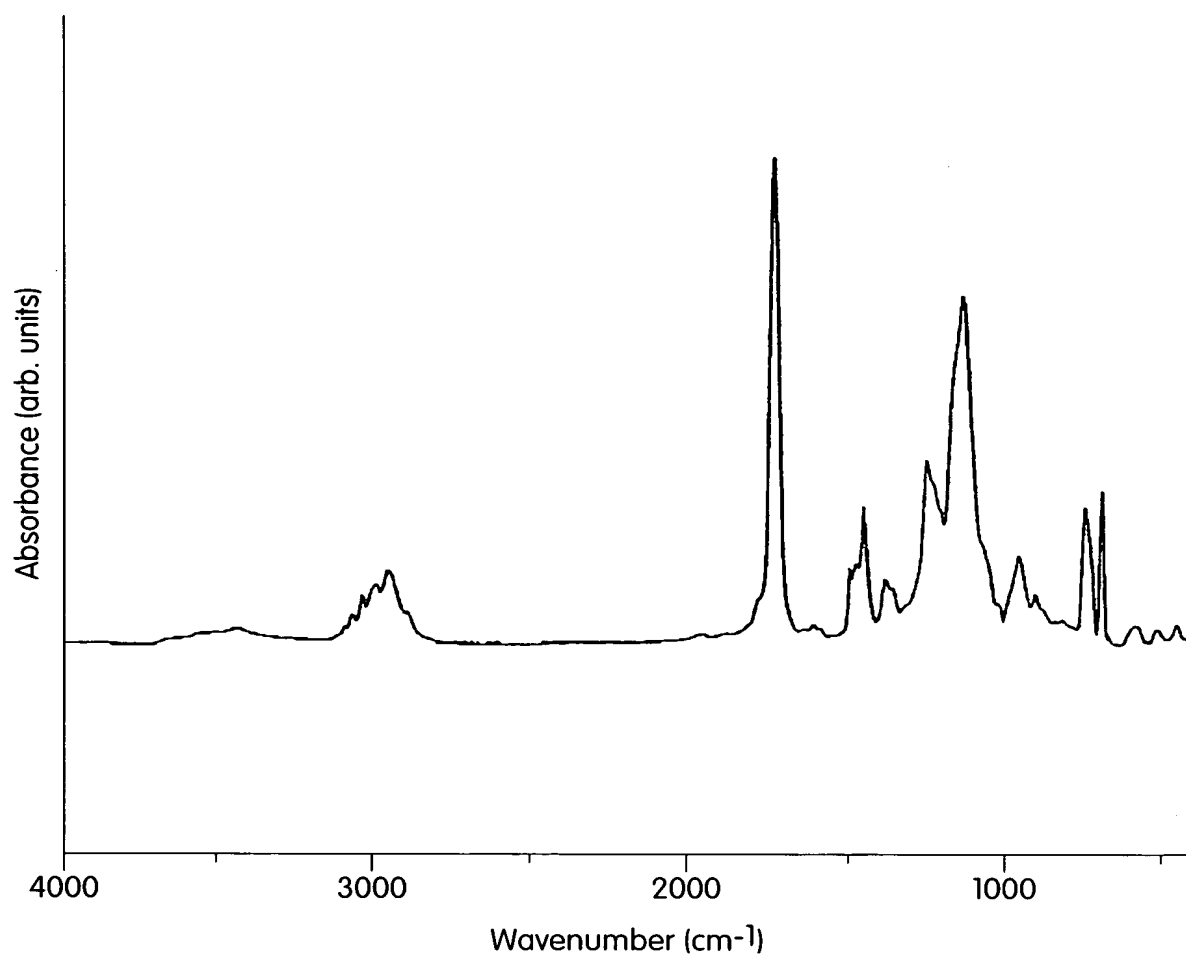


Fig. 7

8/19

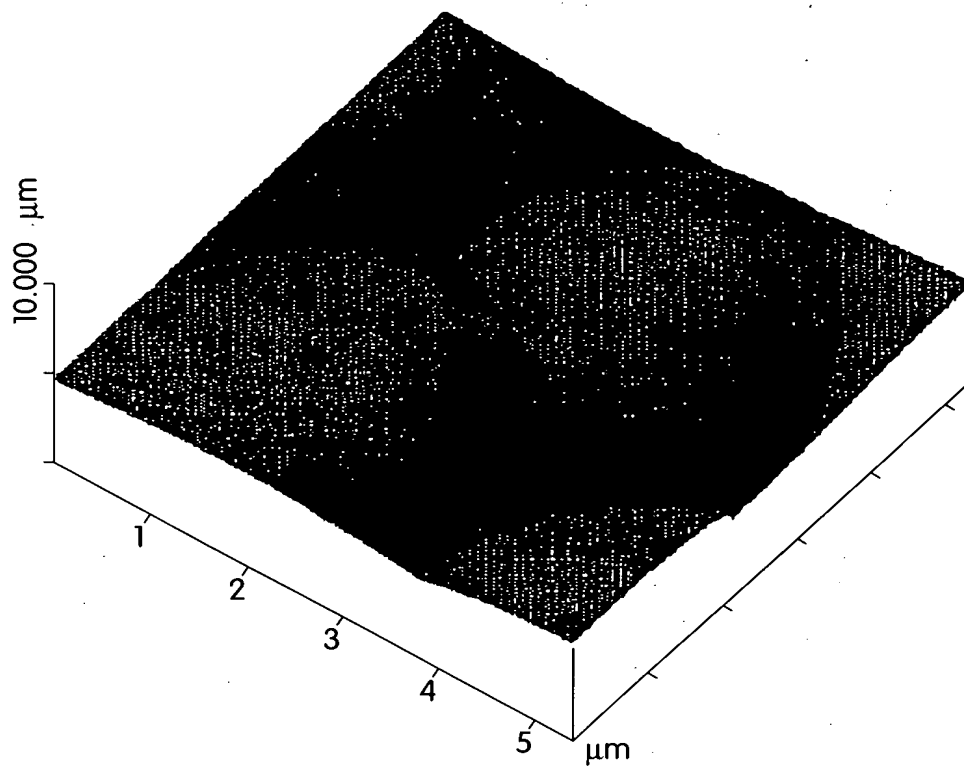
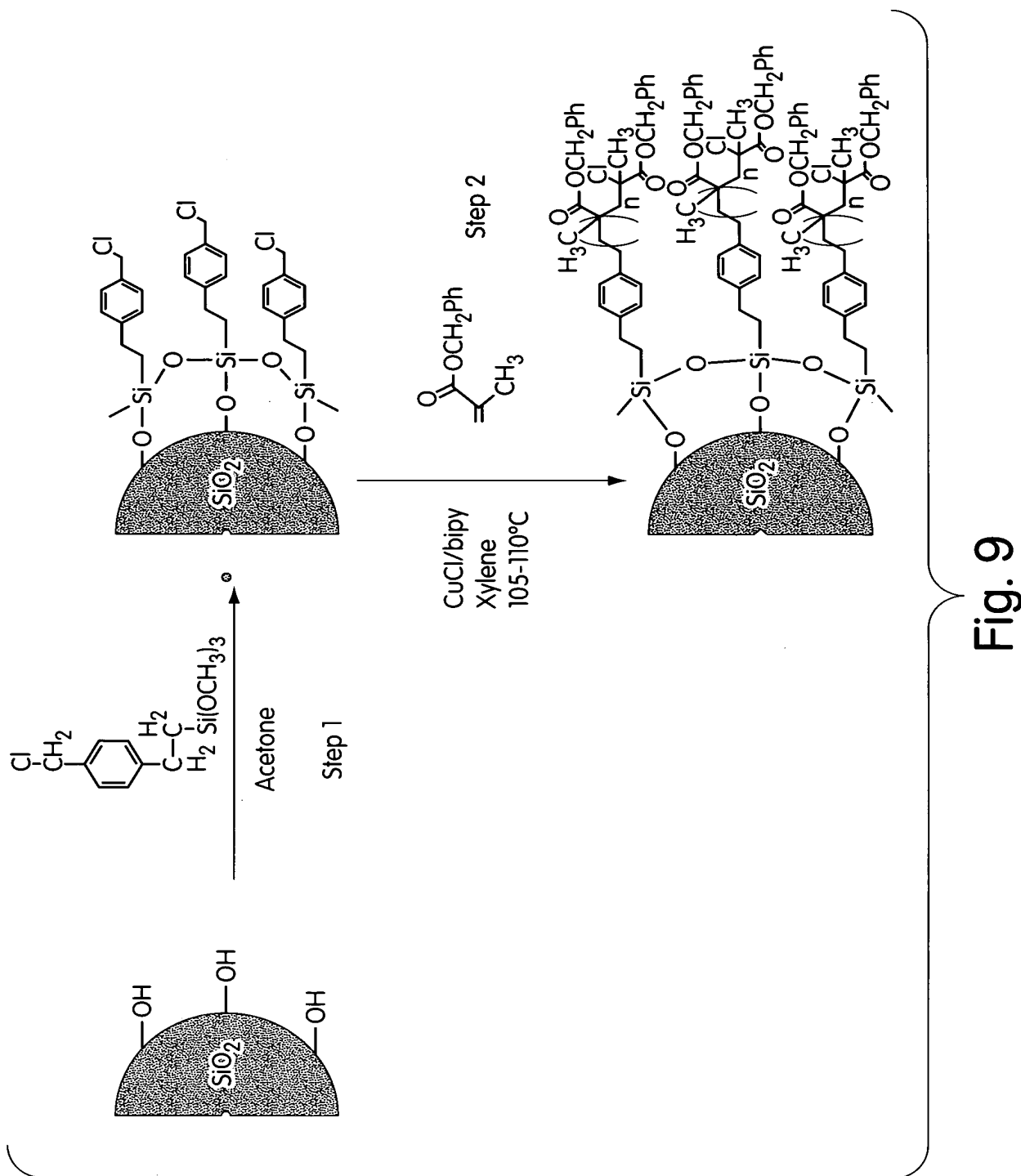


Fig. 8



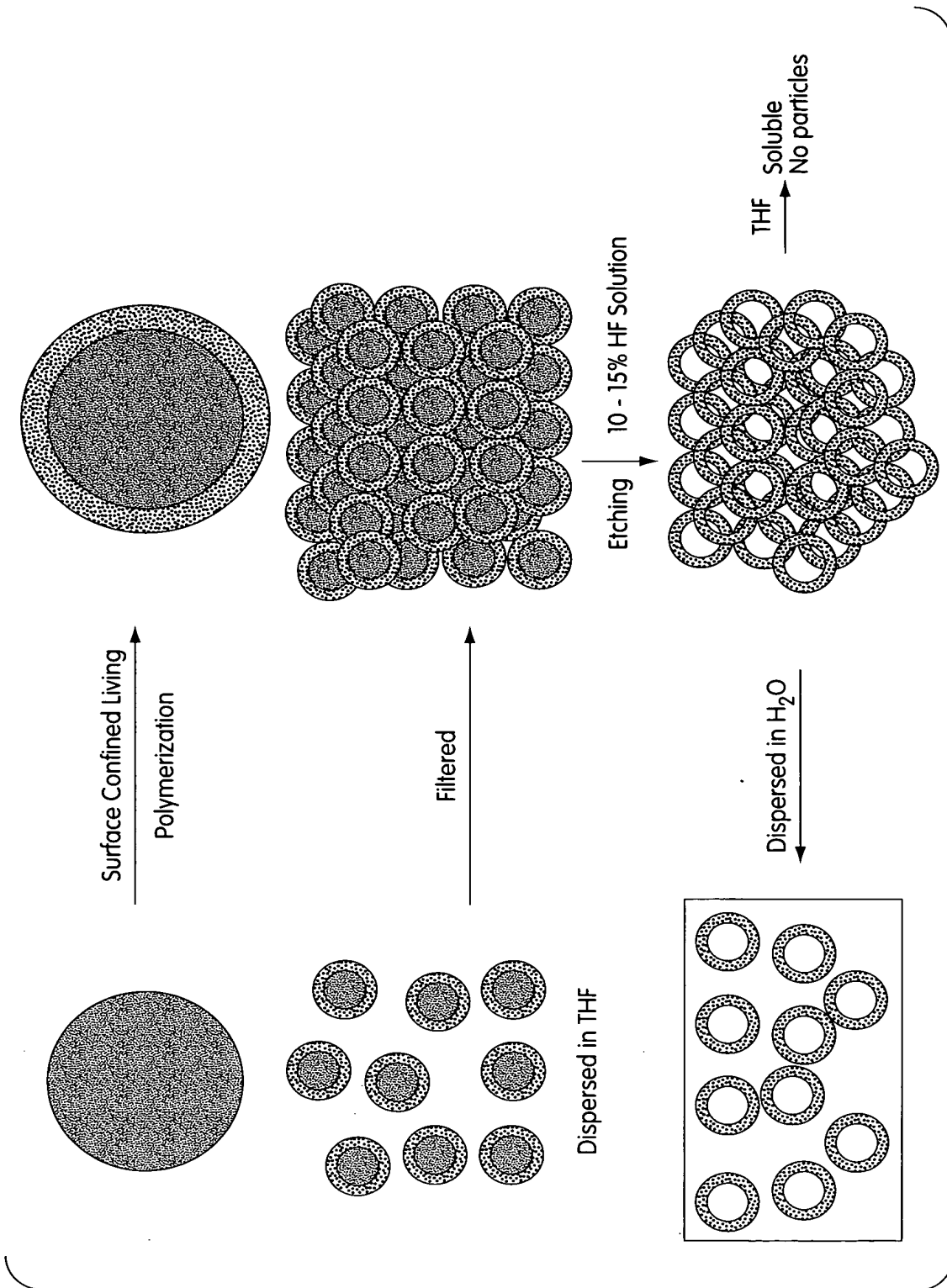


Fig. 10

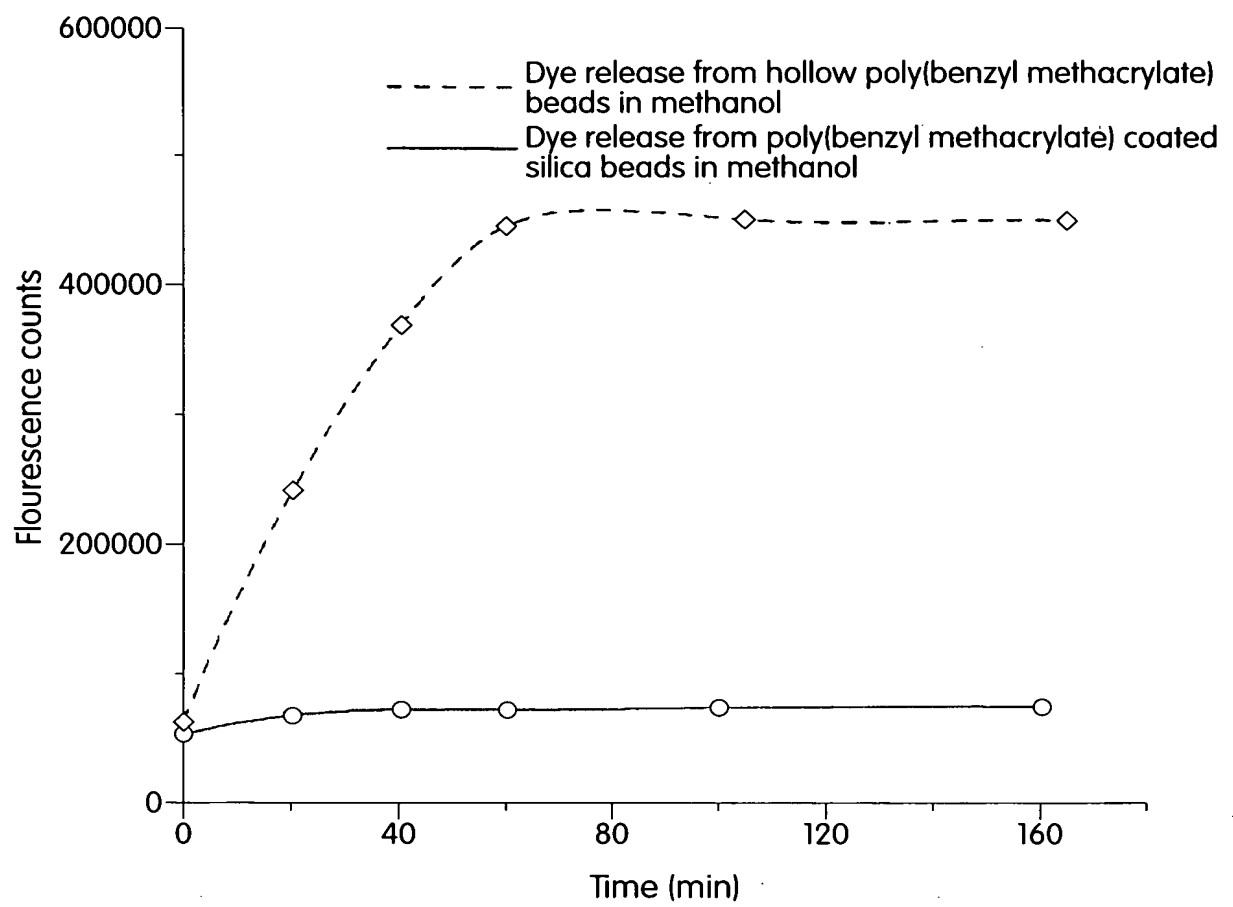


Fig. 11

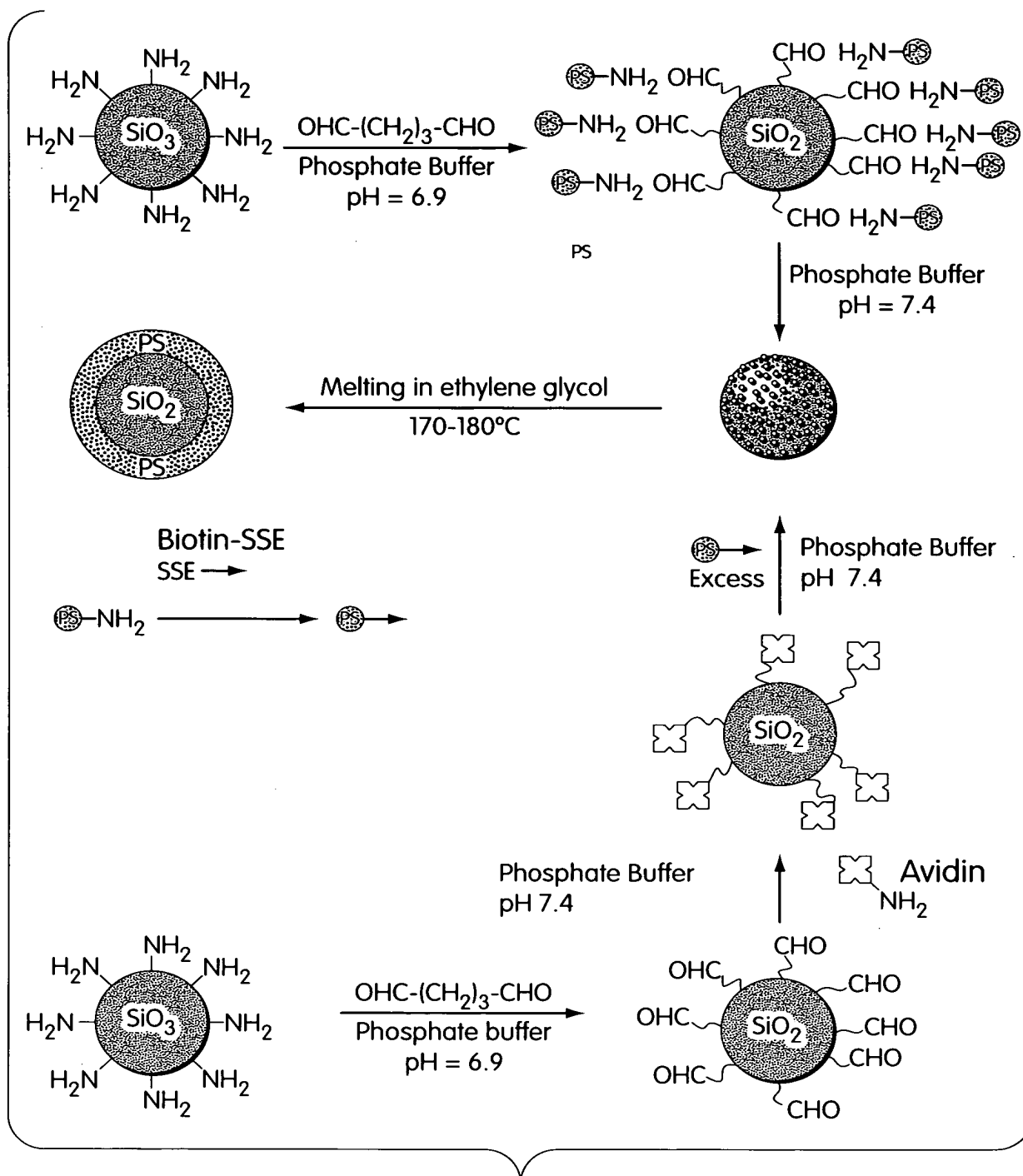


Fig. 12

13/19

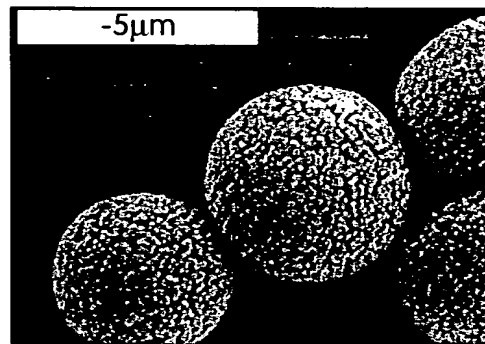


Fig. 13A

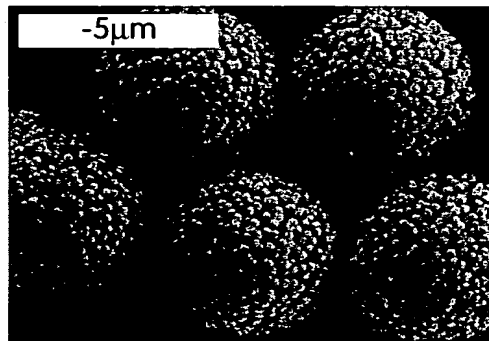


Fig. 13B

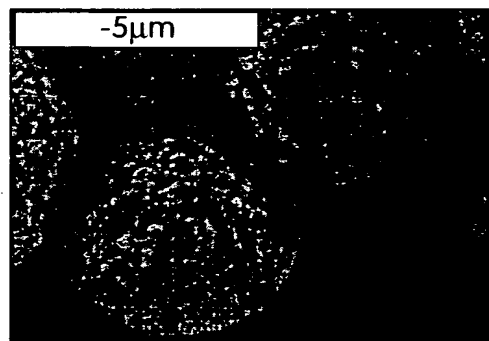


Fig. 13C

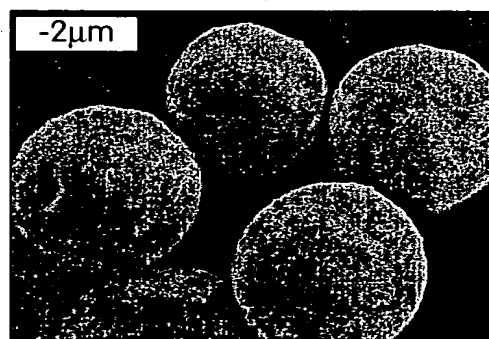


Fig. 13D

14/19

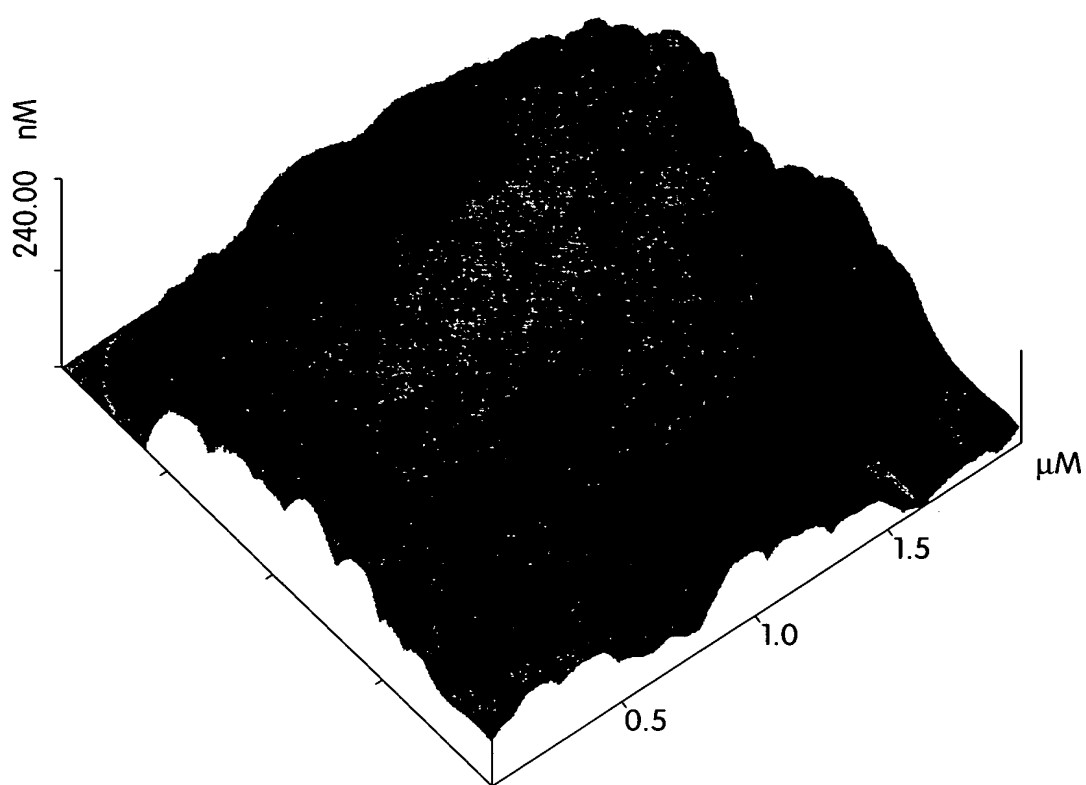


Fig. 14

15/19

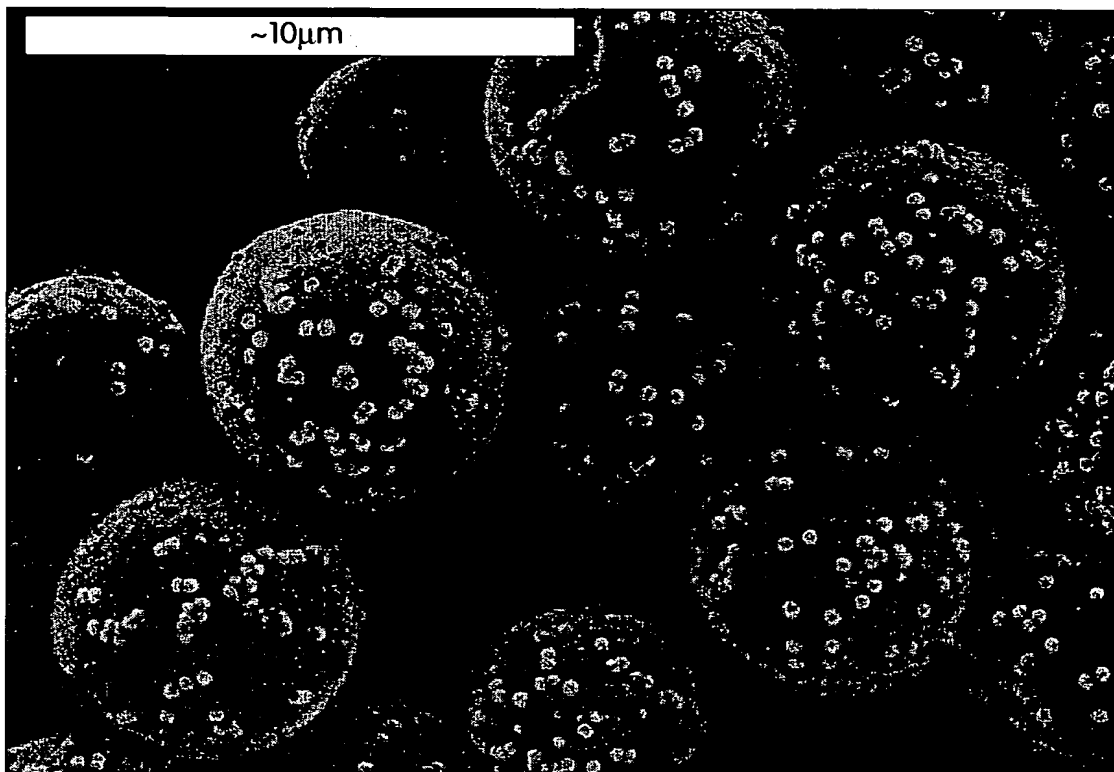


Fig. 15

16/19



Fig. 16

[illegible]

The figure displays three stacked FTIR spectra. The x-axis represents Wavenumbers (cm^{-1}) from 4000 to 500, and the y-axis represents Absorbance (arb. units). The top spectrum (dashed line) is for pure polystyrene, showing characteristic peaks at approximately 3080, 3060, 3020, 3000, 2920, 2850, 1600, 1490, 1450, 1020, 750, and 700 cm^{-1} . The middle spectrum (solid line) is for silica-polystyrene, showing a broad peak around 3400 cm^{-1} and the same peaks as pure polystyrene. The bottom spectrum (dashed line) is for pure silica, showing a broad peak around 3400 cm^{-1} and a sharp peak at approximately 1210 cm^{-1} .

Fig. 17C

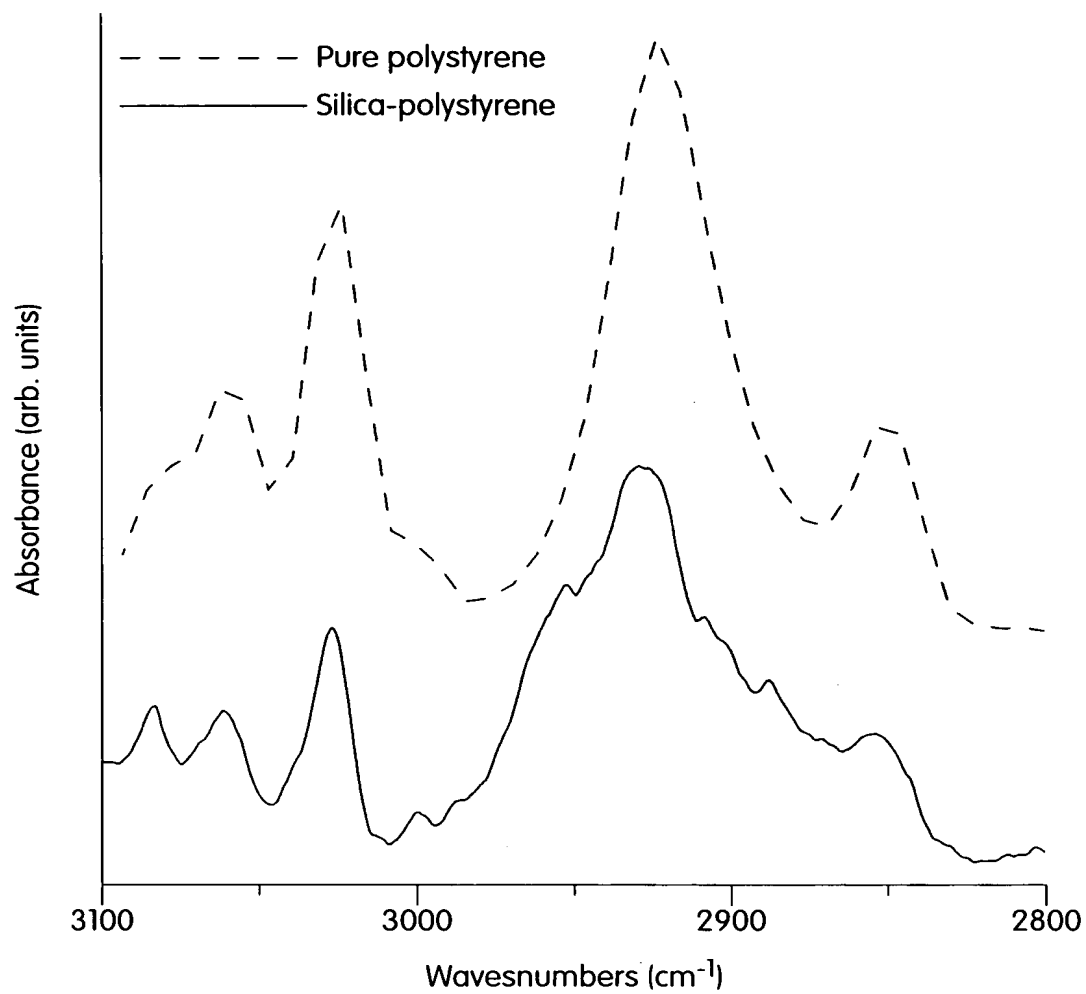


Fig. 18

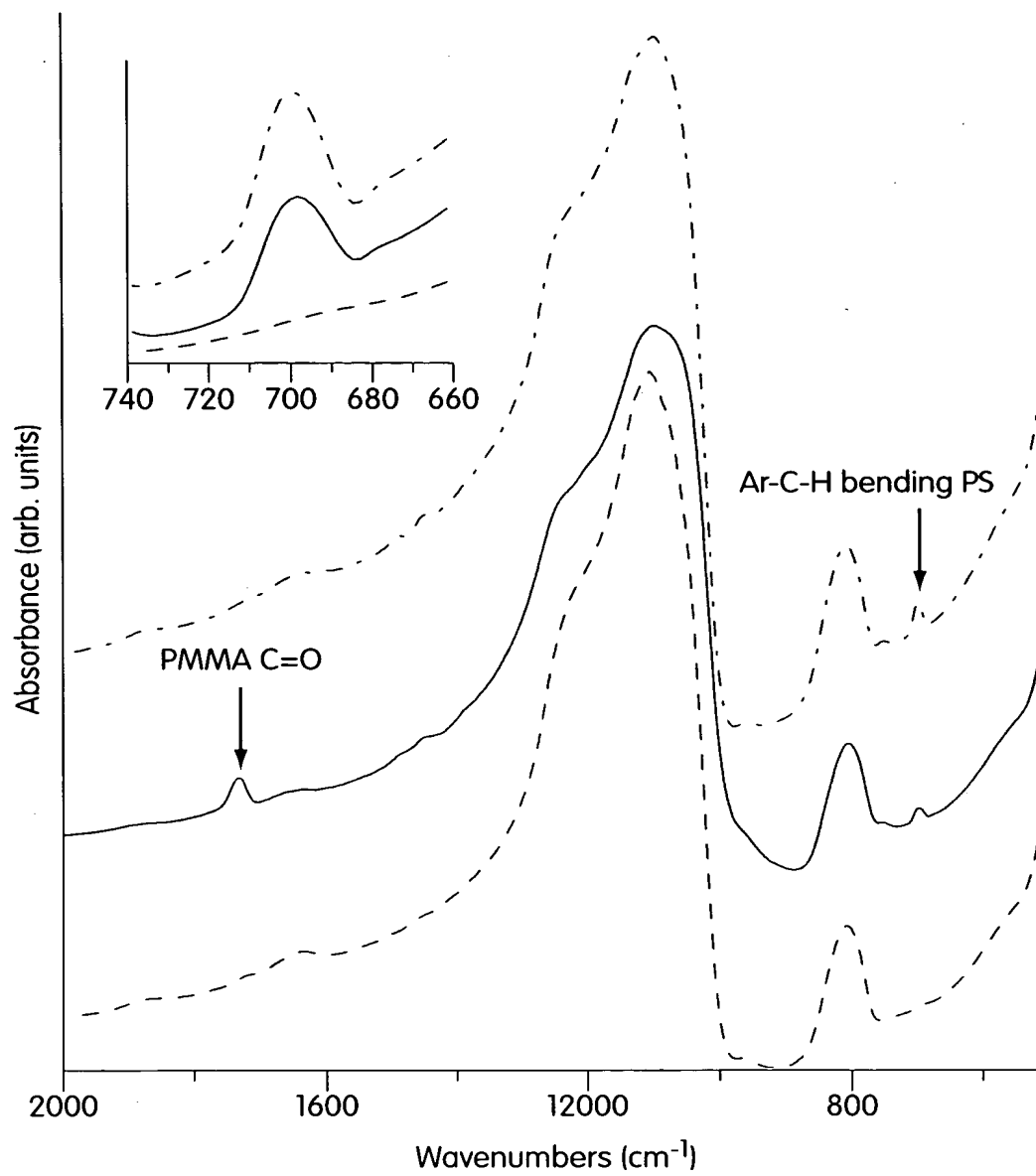


Fig. 19